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09/770,725	01/26/2001	Li Yang	791_130	6015
25191	7590	01/19/2006	EXAMINER	
BURR & BROWN PO BOX 7068 SYRACUSE, NY 13261-7068			CREPEAU, JONATHAN	
			ART UNIT	PAPER NUMBER
			1746	

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/770,725  
Filing Date: January 26, 2001  
Appellant(s): YANG ET AL.

**MAILED**

**JAN 19 2006**

**GROUP 1700**

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Kevin C. Brown  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed November 14, 2005 appealing from the Office action mailed January 14, 2005.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

Art Unit: 1746

6,350,544	TAKAMI et al	2-2002
6,083,644	WATANABE et al	7-2000
6,361,822	KUROSE et al	3-2002

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takami et al (U.S. Patent 6,350,544) in view of Watanabe et al (U.S. Patent 6,083,644) in view of Kurose et al (U.S. Patent 6,361,822), as evidence.

Regarding claims 1 and 17, Takami et al. is directed to a nonaqueous lithium secondary battery comprising a positive and negative electrode laminated through a separator (see abstract and Figure 1). Regarding claims 1, 3, 4, and 17, the positive electrode material is  $\text{LiMn}_2\text{O}_4$ , which has cubic spinel structure (see col. 4, line 49). Regarding claims 1, 5, 6, and 17, the negative electrode active material is a graphitized carbon fiber (see col. 7, line 40). Regarding claims 1, 2, and 17, the battery contains an electrolyte comprising lithium hexafluorophosphate (see col. 10, line 43).

Takami et al. do not expressly teach the water content of each electrode as recited in claims 1 and 17, or that the battery has a capacity of 2Ah or more, as recited in claims 8-11.

However, the latter limitation is not considered to distinguish over Takami because the claimed battery capacity merely represents the scaling of the absolute size of the battery of

Art Unit: 1746

Takami. Such large battery sizes are known to be useful in specific applications, such as in electric vehicles. Generally, changes in size are not considered to patentably distinguish over a reference (MPEP §2144.04(IV)).

Furthermore, in column 14, lines 48-52, Watanabe et al. teach that a positive electrode mixture and a negative electrode mixture both have moisture contents of 50 ppm or less.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Watanabe et al. would motivate the artisan to use electrodes having a moisture content of less than 50 ppm in the battery of Takami et al. In column 14, line 49 et seq., Watanabe et al. teach that it is “preferred...from the point of cycle property” that the electrodes have such a low moisture content. Additionally, the combined moisture content of the electrodes would inherently be lower than 5,000 ppm in case of heating the electrodes at 25 to 200°C, and lower than 1,500 ppm in case of heating at 200°C to 300°C, as recited in claims 1 and 17.

Furthermore, the Kurose et al. patent is directed to lithium secondary batteries. The reference discloses at column 2, line 14 that “[u]se of an active material in a state with a lot of absorbed moisture in battery causes problems such as decrease in a charge/discharge capacity of the battery, increase in internal resistance, and deterioration of the preservation property.” As such, the Kurose patent is taken as evidence that water management is a known problem in lithium secondary batteries, regardless of the specific electrode materials. Further, at column 2, line 12, Kurose specifically identifies “nickel-containing lithium composite oxides” as “tend[ing] to absorb moisture.” This material is disclosed at column 4, line 42 of Takami and can be

Art Unit: 1746

considered to be substantially equivalent to  $\text{LiMn}_2\text{O}_4$ , also disclosed by Takami (and recited in claims 1 and 17).

Regarding claims 12-16, which recite that the battery is used in an electric automobile, these claims do not have to be accorded patentable weight because they recite an intended use and do not further limit the structure of the battery (MPEP §2114).

#### **(10) Response to Argument**

Regarding the Watanabe reference, Appellants assert that there is no indication that the moisture content feature of Watanabe would have any significance in batteries which do not employ positive and negative active materials disclosed in Watanabe. However, it is submitted that the presence of moisture in lithium secondary batteries is a known problem that is appreciated by the prior art. The Kurose patent, cited above, clearly teaches that moisture absorption is a problem in batteries containing nickel-containing lithium composite oxides. This material is very similar to the lithium manganese oxide disclosed by Takami and recited in claims 1 and 17. Furthermore, it is submitted that it is generally known in the art that all materials to be used in a lithium battery must be handled carefully and in inert atmospheres. Alkali metals, in particular lithium, are known to react with moisture contained in the air. Additionally, lithium batteries universally contain nonaqueous electrolytes. As such, it is well known in the art that keeping the moisture level as low as possible within a lithium battery is advantageous both to safe handling of battery components and to battery performance.

Art Unit: 1746

Therefore, the teachings relating to electrode water content in Watanabe are believed to be relevant to the battery of Takami, as set forth in the above rejection.

Appellants further assert that the material disclosed in Watanabe for use in making the negative electrode “can readily absorb water, unlike the carbonaceous material which the negative electrode active substance recited in claim 1 comprises.” However, Appellants do not provide further support for this statement. Furthermore, regardless of the affinity of the carbonaceous material of Takami for absorbing water, the artisan would still have motivation, stated above, for making the electrode as water-free as possible. Appellants further state regarding the Watanabe reference that “heating to more than 200 degrees C is not realistic in a case where a battery is assembled after heating, because binder contained in the electrode would normally be decomposed or would deteriorate at such temperatures.” However, Watanabe merely requires heating from 80-350 degrees, more preferably 100-250 (col. 14, line 46). Further, it is noted that both electrodes of Watanabe may contain a binder (see col. 15, lines 8 and 27). In performing the heat-treatment of Watanabe, the artisan would be sufficiently skilled to adjust the temperature so as to not decompose the binder thereof. As such, Appellants’ apparent assertion that it would not be obvious to perform the electrode heat treatment of Watanabe on the electrodes of Takami is not persuasive.

#### **(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner’s answer.

Art Unit: 1746

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

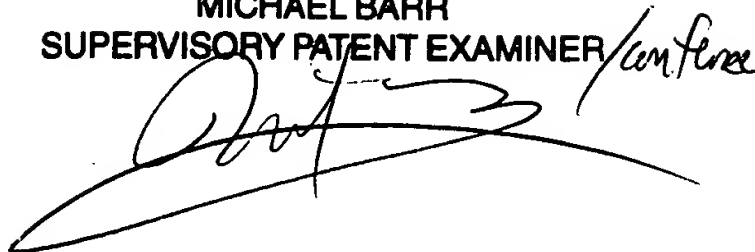


Jonathan Crepeau  
Primary Examiner  
Art Unit 1746

Conferees:

Michael Barr  
Supervisory Patent Examiner  
Art Unit 1746

MICHAEL BARR  
SUPERVISORY PATENT EXAMINER / *conferree*



Roy King  
Supervisory Patent Examiner  
Art Unit 1742

ROY KING *R-K*  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

~~APPEAL CONFEREES~~ \_\_\_\_\_